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REMARKS

This Response is filed within two months of the June 14, 2004 mailing date of the Examiner's final action. Claims 1-9, 11-15, 17, and 19-23 were finally rejected under 35 U.S.C. 103(a) as being unpatentable over Horii, U.S. Patent No. 6,460,056, and Lande, U.S. Patent No. 6,665,643. Claims 10, 16, 18, and 24 were finally rejected under 35 U.S.C. 103(a) as being unpatentable over Horii and Lande as applied to claims 1, 11, 17 and 22 above, and further in view of "Text-driven automatic frame generation using MPEG-4 synthetic/natural hybrid coding for 2-D head-and-shoulder scene." Claims 1-24 are pending and at issue. Claims 1, 11, 17 and 22 are the only independent claims. Entry of this Amendment is proper as it places the present application in condition for allowance by correcting the erroneous dependency clause of claim 2, and also by illustrating the novelty of the claimed invention over the cited prior art. In view of the following Remarks, reconsideration and withdrawal of the aforementioned rejections are respectfully requested.

Before discussing the cited prior art and the Examiner's rejections of the claims in view of that art, it would be appropriate to present a brief summary of applicants' claimed invention. The invention displays a sign language animation corresponding to a speech component of an audio/video signal. Specifically, the sign language animation is displayed simultaneously with a visual image corresponding to a video component of the audio/video signal. This functionality is not accomplished with pre-stored images or image components that are subsequently accessed using information derived from a speech component and retrieved to render a video signal simulating sign language gestures. Instead, and in accordance with the inventive method of claim 1, the speech component is mapped to a sign language animation model to generate animation model parameters

which correspond to sign language images. An animation signal is then generated from the animation model parameters. Thereafter, an animation image is rendered from the animation signal on the monitor display screen. Claim 1 recites that the rendering of the animated image from the animation signal is performed "without accessing an image database containing pre-stored images". In other words, no sign language images need to be stored to perform the inventive method of claim 1. Rather, the rendering of the animation image is performed directly from the animation signal. Independent claims 11, 17 and 22 also specify that the rendering of the animation signal occurs "without accessing an image database containing pre-stored messages".

A. Claim Rejections under 35 USC 103(a) - Claims 1-9, 11-15, 17, and 19-23

The Examiner finally rejected claims 1-9, 11-15, 17, and 19-23 under 35 U.S.C. 103(a) as being unpatentable over Horii, U.S. Patent No. 6,460,056, and Lande, U.S. Patent No. 6,665,643. According to the Examiner, Horii teaches all of the limitations set forth in claims 1, 2, 11, 17, and 22 except for the rendering of animations "without accessing an image database containing pre-stored images". The Lande patent is cited in an effort to overcome the noted deficiencies of Horii.

Horii discloses a method for displaying sign language images by utilizing pre-stored images of sign language signals. The pre-stored images are retrieved by processing a speech signal to obtain character codes which are then used to access certain stored images in image dictionary 6 (FIG. 1).

Lande discloses techniques for animating a synthesized human face model from an audio signal (col. 1, lines 8-11; col. 2, lines 32-25). Phonetic information items (visemes) are split into parameters that define shape and positions of the mouth and jaw of the face model, and that are associated with values indicating a difference from a neutral position (col. 2, lines 52-58). The values of these parameters define the deformations to be applied to the face model in order to

achieve animation (Abstract, lines 11-15). Lande neither discloses nor suggests display of sign language symbols.

To establish a prima facie case of obviousness, all claim limitations must be taught or suggested by the prior art. *In re Royka*, 180 USPQ 580 (C.C.P.A. 1974). See also MPEP 2143.03.

Even if, *arguendo*, the teachings of Horii and Lande are combined, the resulting combination fails to meet applicant's claimed invention. Combining Horii and Lande results in a system that displays pre-stored sign language images in conjunction with a voice-animated model of a face. Neither reference teaches or suggests applicants' display of sign language images without accessing pre-stored images, as is called for in claims 1, 2, 11, 17, and 22. No matter how Lande's human face is animated, the face cannot be used to display sign language symbols. Rather, Horii uses a speech signal to retrieve pre-stored sign language images. Lande does not even involve display of sign language images, and is instead directed to using a speech signal to calculate deformation parameters for deforming a face model from a relaxed neutral reference position. Unlike Lande's face model that employs jaws and lips with a "neutral position" (col. 2, line 56), sign language is displayed with hands and arms that have no natural "neutral" position, making it virtually impossible for the skilled artisan to determine the manner in which such techniques might be applied to the Horii reference. Moreover, Lande's animation need only consider motion of two items (lip and jaw) about one dimension (up/down), whereas animation of hands and arms requires consideration of a multiplicity of movements in three dimensions (i.e., fingers, hand, wrist, palm, forearm, elbow). For at least the foregoing reasons, applicants' invention as set forth in claims 1, 2, 11, 17, and 22 is not rendered obvious by the combination of Horii and Lande.

The Examiner also rejected claims 3-9, 12-15, 19-21 and 23 as being unpatentable over the combination of Horii and Lande. However, claims 3-9, 12-15, 19-21 and 23 depend, either directly

or indirectly, from claims 1, 2, 11, 17, and 22. Accordingly, it is submitted that claims 3-9, 12-15, 19-21 and 23 are also patentable for at least the same reasons as set forth above in connection with claims 1, 2, 11, 17, and 22.

With respect to claims 3-5, the Examiner stated that "Horii fails to disclose that the mapping step is performed remotely from the monitor, that the mapping step is performed proximate the transmitter, or a step of transmitting the animation model parameters to the monitor." (Final Office Action, page 4). The Examiner then takes Official Notice that it is "notoriously well known in the state of the art that displays can be located remotely from where video signals and parameters are generated and transmitted." However, the Examiner's Official Notice is improper because the Final Office Action fails to provide any prior art citation to support this allegedly "well known" feature. *In re Royka*, 180 USPQ 580 (C.C.P.A. 1974). See also MPEP 2143.03.

B. Claim Rejections under 35 USC 103(a) - Claims 10, 16, 18, and 24

The Examiner finally rejected claims 10, 16, 18, and 24 under 35 U.S.C. 103(a) as being unpatentable over Horii and Lande as applied to claims 1, 11, 17 and 22 above, and further in view of an IEEE article entitled, "Text-driven automatic frame generation using MPEG-4 synthetic/natural hybrid coding for 2-D head-and-shoulder scene." With respect to the Examiner's rejection of claims 10, 16, 18, and 24 on the basis of Horii and Lande, it should be noted that claim 10 depends from claim 1, claim 16 depends from claim 11, claim 18 depends from claim 17, and claim 24 depends from claim 22. Accordingly, claims 10, 16, 18 and 24 are patentable over Horii and Lande for at least the reasons set forth above in connection with claims 1, 11, 17, and 22.

The Examiner's rejection of claims 10, 16, 18 and 22 in view of Horii and Lande as applied to claims 1, 11, 17 and 22 above, and further in view of an IEEE article entitled, "Text-driven

automatic frame generation using MPEG-4 synthetic/natural hybrid coding for 2-D head-and-shoulder scene" is improper and should be withdrawn. Even if the teachings of all three of the aforementioned references are combined, the resulting combination fails to meet applicants' claimed invention as set forth in claims 10, 16, 18 and 22.

The Examiner observed that Horii and Lande do not teach or suggest use of SNHC (synthetic natural hybrid coding) to generate animation model parameters, but erroneously relies upon the above-referenced IEEE article to supply the foregoing limitation. Although the above-referenced IEEE article utilizes SNHC coding, the technique is only applied to a face model of a speaker. The IEEE article includes no teaching or suggestion as to how SNHC might be employed to a model of hands and arms, so as to enhance communication of sign language symbols. None of the cited references teach or suggest applicants' technique of using SHNC to generate animation parameters for sign language symbols as set forth in claims 10, 16, 18, and 24. Accordingly, claims 10, 16, 18 and 24 are patentable over the combination of Horii, Lande and the aforementioned IEEE article.

C. Summary

In view of the foregoing considerations, it is submitted that all claims are now in condition for allowance. Favorable action is earnestly solicited.

It is believed that no fees or charges are required at this time in connection with the present application; however, if any fees or charges are required at this time, they may be charged to our Patent and Trademark Office Deposit Account No. 03-2412.

Respectfully submitted,

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